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Economic and Environmental Conference

Laser Scanning Technology for 3-D Representations

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Agenda

- Coastal and Inland Waterway Infrastructure
- Operations and Maintenance Challenges
- Laser Scanning Capabilities
- Market Forecast and Driving Forces
- Terrestrial Laser Scanning Performance Parameters and Products
- Water Borne and Subterranean Laser Scanning
- Laser Scanning Resources

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Coastal and Inland Waterway Infrastructure

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Operations and Maintenance Challenges

- Almost half of the U.S. inland waterway facilities are nearing or extending their 50-year planned design life

- Ensuring expected performance levels will require rebuilding or replacing many existing locks, dams, hydropower and water supply facilities

- The future challenge will be to integrate and utilize laser scanning technologies into the

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Laser Scanning Technology

Provides

- Real-time assessment of Civil Works projects
- Remote monitoring by proje engineers and managers
- Early detection of error in construction procedures
- Can generate as-built models of structures for analysis and redesign
- Improves project planning and

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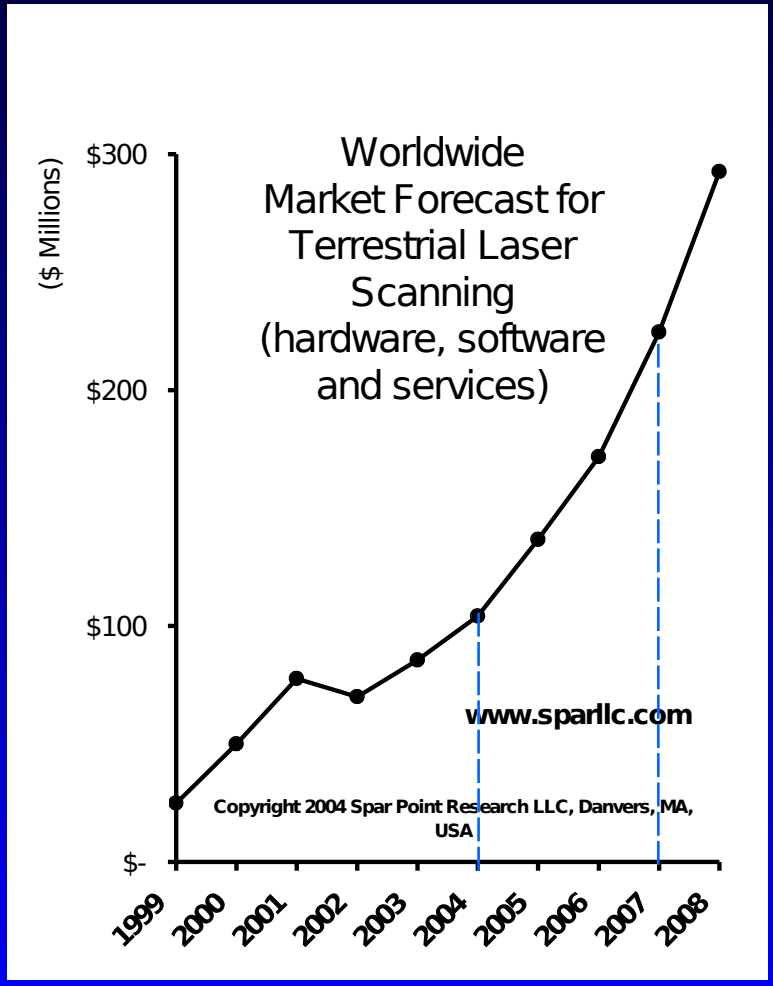
Worldwide Market Forecast



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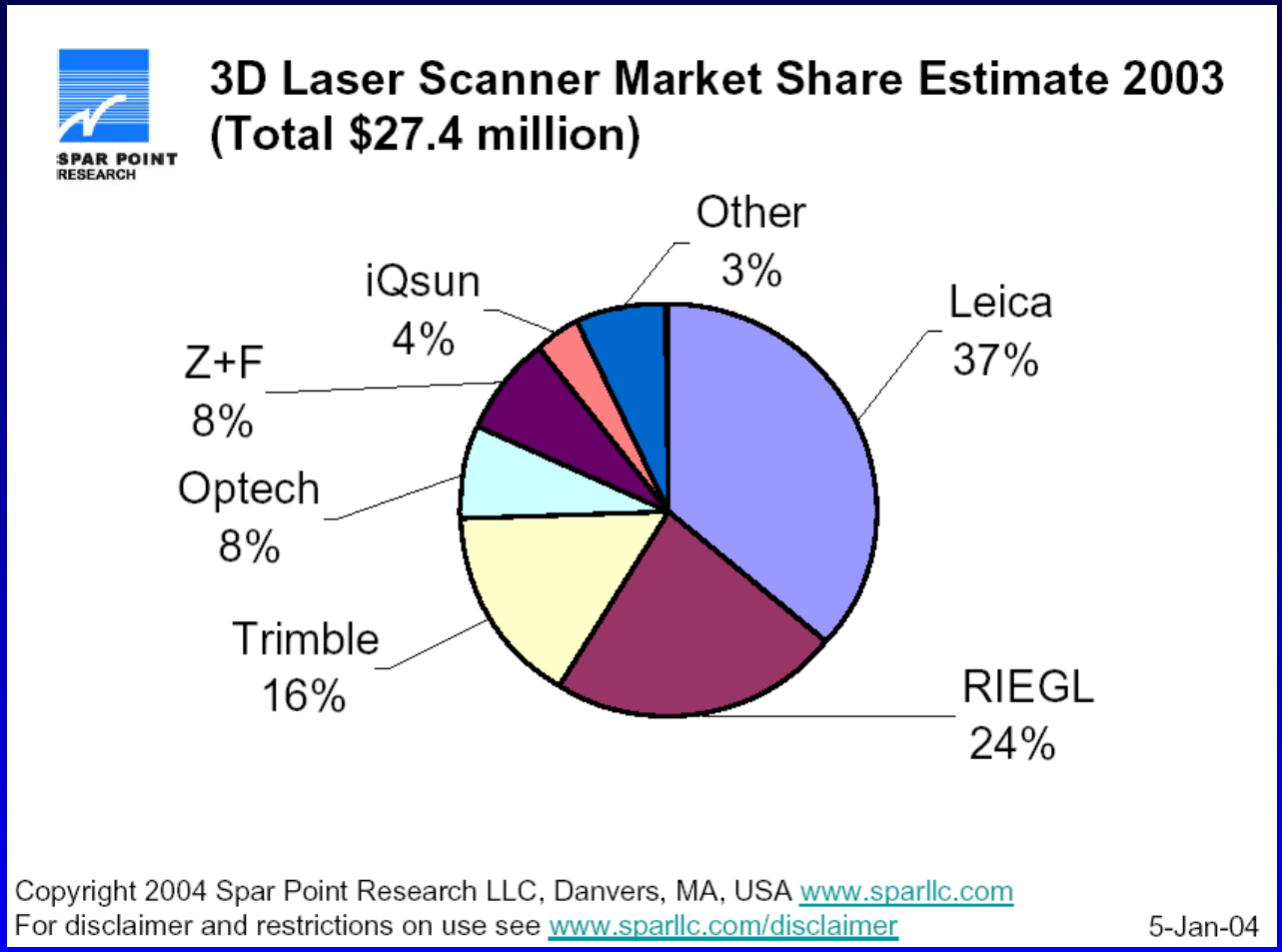
Market Share



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Driving Forces with in the 3D Laser Scanning Market

- Rapid evolution of hardware and software technologies are crossing new thresholds of maturity and practicality

- Hardware advances are enabling higher-resolution data collection

- New software is making it easier to work with large point-cloud data sets

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Laser Scanning Performance Parameters

Have a wide variance for

- Laser wavelength
- Beam diameter
- Data acquisition rate
- Distance and position accura
- Minimum and maximum rang

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How Laser Scanning Work

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Establish Control On Structure Using Differential GPS

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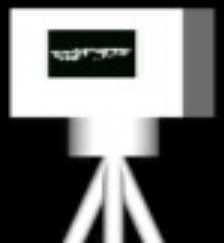
Laser Scan Individual Segments



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Software Merges Scans Recognizing Similar Points

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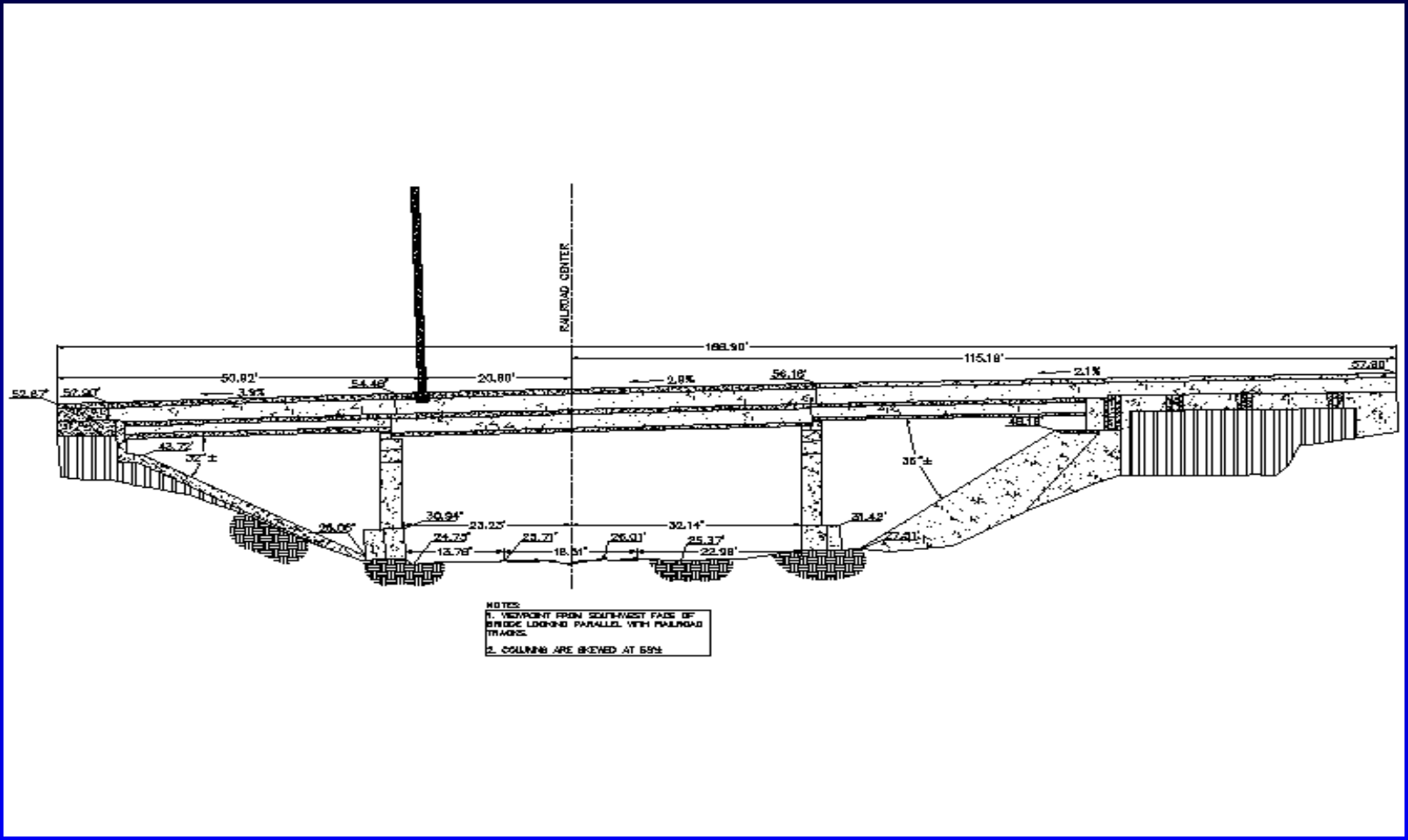
SW View (AutoCAD) Created from Scanned Data



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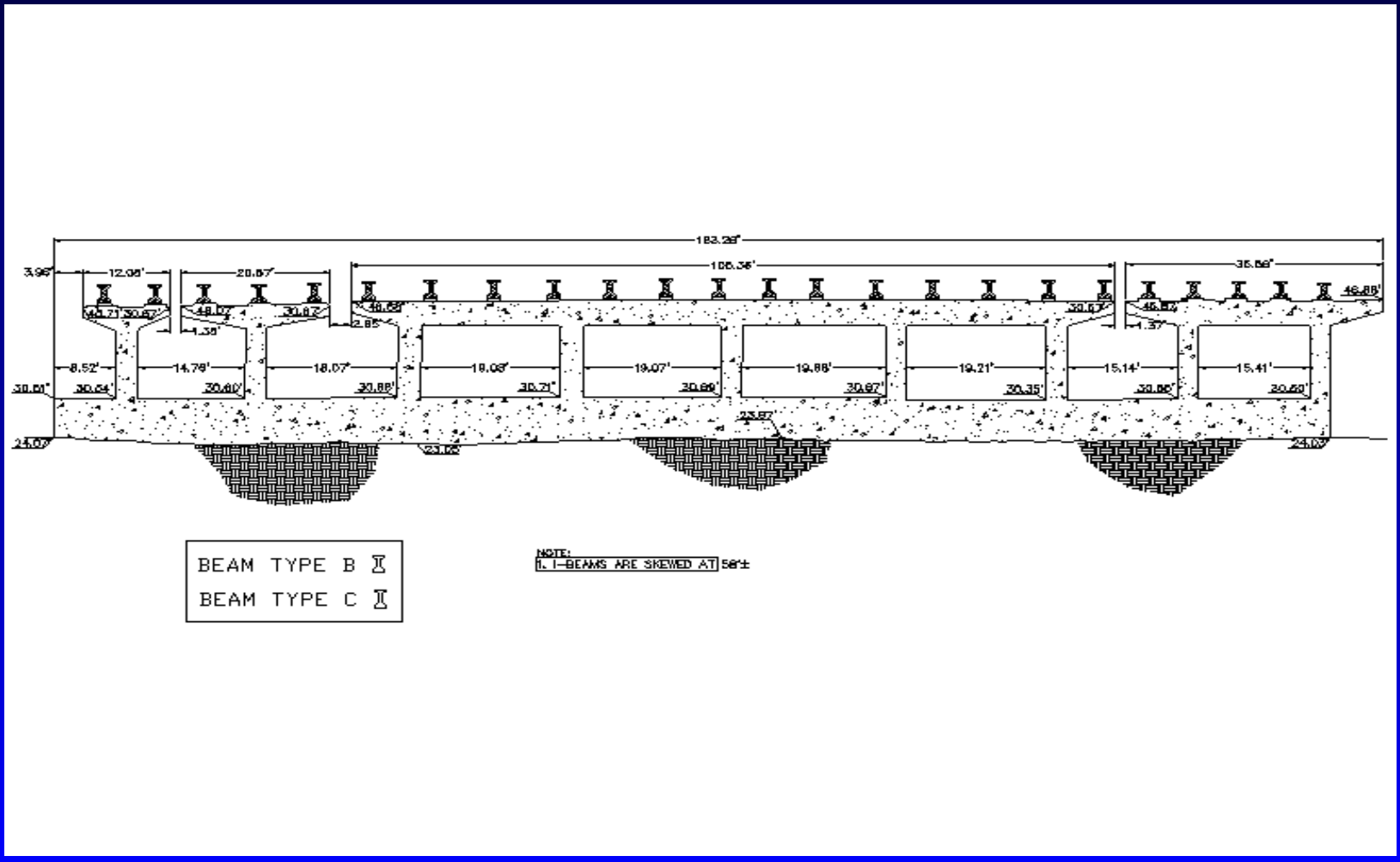
West View (AutoCAD) Created from Scanned Data



Port St. Lucie Lock & Dam

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Dam Gates and Lock

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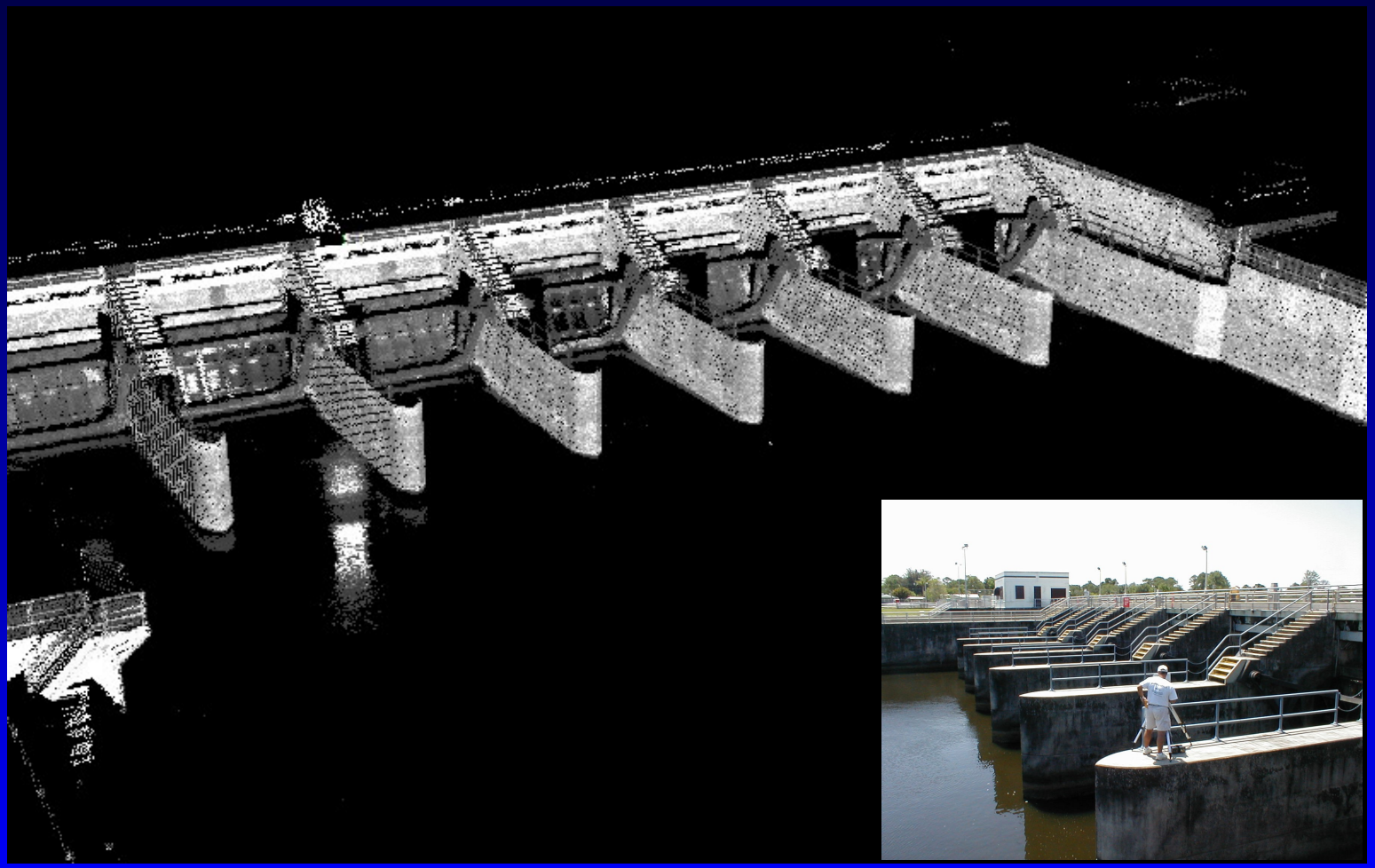
Laser Scanning Infrastructure Modeling



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3D Object Model from Laser Scanning Data

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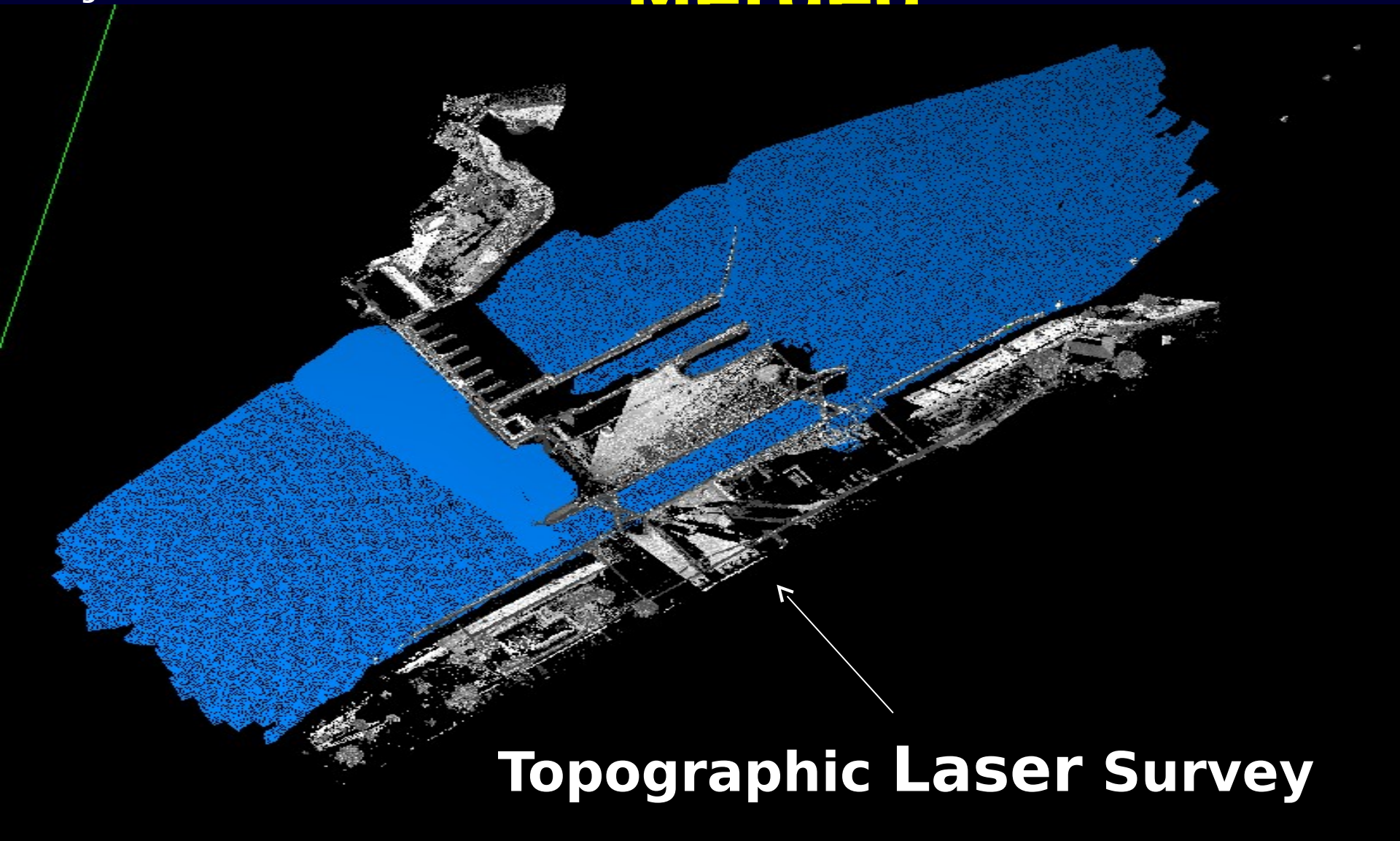
Multibeam Soundings & Laser Data of Lock & Dam Merged



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Water Borne Jetty Mapping

GPS/ DGPS Positioning System

Laser Scanner

Heave/Pitch, Roll, and Yaw Motion Sensor

Surveying beach profiles, canals, river banks, and cliff faces is difficult and often dangerous

MDL's Waterborne Dynamic Laser Scanning System enables continuous high speed laser scans of above wat

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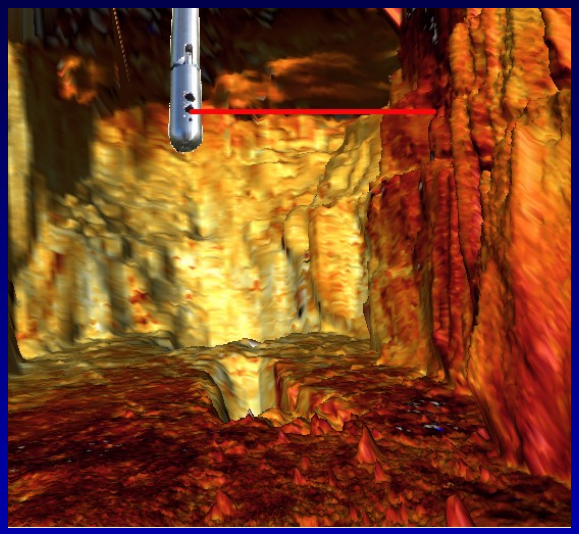
Subterranean Laser Scanning



The MDL Cavity Auto Scanning System measures the 3D shape of the void and surface reflectivity and maps this onto a computer model

Designed for the mining industry Optech's Cavity Monitoring System measures dimensions of voids through boreholes as narrow as 25cm

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Benefits

- Laser scanning technologies expedites results and increases completeness of coverage

- Using laser scanning technology to redesig and rebuild inland waterway facilities will significantly reduced future operational field costs

- Geospatial R&D Work Unit is setting a course for the modernization of the Corps Operations and Maintenance field measurement activities

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Laser Scanning Resources

SPAR 2004 - Best Practices for Capturing and Managing Existing-Conditions Data, 19-20 May 2004, Houston Texas

The first industry event focused on using the newest laser scanning and related technologies to drive down project rework cost, compress schedules, and reduce project execution risk for civil infrastructure, transportation, offshore construction and architectural capital projects

http://www.sparllc.com/